

WHAT IS CLAIMED IS:

1. A novel class of purified proteins, referred to as expansins, possessing catalytic activity and having amino acid sequence similarity of at least about 60% to the amino acid sequence of SEQ. ID. NO:1.

2. The novel class of purified proteins according to claim 1, wherein said sequence similarity is at least about 70% relative to SEQ. ID. NO:1.

3. The novel class of purified proteins according to claim 1 wherein said proteins have a relative molecular mass of about 25-30 kD.

4. The novel class of purified proteins according to claim 1 wherein said proteins are purified from natural sources derived from growing monocotyledonous or dicotyledonous plants.

5 5. The novel class of purified proteins according to claim 1 wherein said proteins are purified from natural sources derived from monocotyledonous or dicotyledonous plants selected from the group consisting of stem and leaf vegetables, fruit and seed vegetables, fiber, forest and ornamental crops, grasses and cereals.

6. The novel class of purified proteins according to claim 5 wherein said natural sources further comprise oat, cucumber, broccoli, celery, tomato, cotton, flax, cabbage and corn plants.

7. The novel class of purified proteins according to claim 1 wherein said proteins are purified from natural sources derived from cucumber, oat, Arabidopsis, rice and Helix pomatia.

8. The novel class of purified proteins according to claim 7 wherein said proteins are derived from fractionation of the proteins obtained from said natural sources.

9. Method of using the novel proteins of claim 1 to alter the mechanical strength of cellulose by contacting a quantity of cellulose with a quantity of at least one of said proteins.